



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 37162.3-2021

**Hydraulic fluid power - Monitoring the level of particulate
contamination of the fluid - Part 3: Use of the filter blockage
technique**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents" Drafting.

This document is the third part of GB/T 37162 "Monitoring of Particle Pollution Degree of Hydraulic Transmission Fluids". GB/T 37162 has been released

The following parts.

---Part 1. General Provisions;

---Part 3. Using filter blocking technology.

The translation method used in this document is equivalent to ISO 21018-3:2008 "Monitoring of Contamination Degree of Liquid Particles in Hydraulic Transmission Part 3. Benefits

Blocking technology with filter membrane.

The Chinese documents that have consistent correspondence with the normatively cited international documents in this document are as follows.

---GB/T 17446-2012 Fluid Power System and Components Vocabulary (ISO 5598:2008, IDT)

---GB/T 17484-1998 Identification and control of cleaning methods for hydraulic oil sampling containers (idt ISO 3722:1976)

---GB/T 17489-1998 Hydraulic particle pollution analysis Extract liquid samples from working system pipelines (idt ISO 4021:1992)

---GB/T 18854-2015 The calibration of hydraulic fluid automatic particle counter (ISO 11171:2010, MOD)

---GB/T 28957.1-2012 Road vehicles used for filter evaluation test dust Part 1. Silicon oxide test dust

(ISO 12103-1:1997, MOD)

---GB/T 37162.1-2018 Monitoring of particle pollution degree of hydraulic transmission liquid Part 1. General (ISO 21018-1:

2008, MOD)

This document has made the following editorial changes.

--- Deleted the notes in 6.2.12 and 8.6.2.2, because the contents of the note do not conform to the actual situation of our country's existing test equipment.

--- "μm" in Table 2 and Table 3 is uniformly revised to "μm(c)".

Introduction

In the hydraulic system, the power is transmitted and controlled by means of the pressurized liquid in the closed circuit. The liquid is both a lubricant and a dynamic

Force transmission medium. The presence of solid particle contaminants in the liquid will not only hinder the lubrication performance of the hydraulic fluid, but also cause the wear of the components.

damage. The degree of particle contamination in the liquid will directly affect the performance and reliability of the system, so it should be controlled within the allowable range of the system.

GB/T 37162 aims to provide a unified and consistent procedure for the instrument to monitor the pollution degree of the hydraulic system, and it is intended to be composed of four parts.

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---Part 1.General Provisions. The purpose is to specify methods and techniques for monitoring particle contamination in hydraulic systems.

---Part 2.Calibration and verification procedures for on-site pollution monitors. The purpose is to specify the calibration for monitoring the particle pollution degree of the hydraulic system.

Standards, verification methods and procedures.

---Part 3.Using filter blocking technology. The purpose is to specify the use of membrane blocking technology (also known as mesh occlusion or pore blocking)

Technology) A method for semi-quantitative monitoring of liquid particle contamination on-line or off-line.

---Part 4.Application of shading technology. The purpose is to stipulate the use of shading

technology (also known as photoresist method or shading method) online or offline

Method of monitoring the contamination degree of container particles.

Quantitative determination of particulate pollutants requires accurate acquisition of representative liquid samples and accurate determination of their pollution degree. Benefits of pollution monitoring

The realization of this has promoted the development of online (that is, directly connected to the system) instruments to reduce measurement errors caused by bottle sampling.

Automatic particle meter

Counters (APC) and monitors have been developed and widely used. However, the hydraulic fluid in many systems may not be suitable for automatic particle counter measurement.

The measurement method, because the optical interface produced by two-phase liquid (emulsion), immiscible liquid (water-in-oil and oil-in-water), and gas in the liquid will affect the optical interface.

Interfere with the operation of the automatic particle counter (APC) and fail to give accurate test data.

For occasions where shading or light scattering technology is not applicable, an instrument using filter blocking technology has been specially developed to provide an alternative

Online instrument. The principle is that the blocking rate of the filter membrane is related to the number of particles whose size is larger than the pore size of the filter membrane.

Adopting membrane blocking technology

The instrument does not directly measure the size of individual particles, so the principle of direct traceability cannot be used.

The instruments using this technology have been widely used in industry, so it is necessary to formulate national standards to standardize their operating procedures. This document stipulates

A procedure for assessing the pollution degree of hydraulic fluid by using a filter blocking instrument. The document also includes procedures for correct calibration and verification of the instrument.

Order to ensure the consistency of instrument measurement results and close correlation with online or mainline shading instruments.

Monitoring of particle contamination of hydraulic transmission liquid

Part 3.Utilize the filter blocking technology